27 FEB 1962

TDG

(U) Request for Doctorate Level Training

AFSC
Andrews AFB
Wash 25 DC

1. In accordance with the provisions of AFSCR 50-17 dated 14 Sep 61, attached for review and consideration are documents relating to the establishment of doctorate level training in the field of terrestrial and planetary scientific/intelligence exploitation.

2. The purposes of this recommended educational program is to develop a scientific skill critically needed in AFSC to permit a complete R&D and analysis approach to space reconnaissance program. This applies to both terrestrial and future extraterrestrial reconnaissance probes. With the introduction of the scientific and analysis problems posed by advanced space reconnaissance programs, it becomes necessary and distinctly advantageous to have recourse to a combination of scientific skills. One of these combinations involves the scientific capability to identify optical equipment and equipment environments and to follow through to the extraction and optimum use of the photographic scientific/intelligence information which will be acquired in the course of these operations. A proposed training program has been designed to meet this need, making an assumption that part of the needed, combined scientific skills are within the applicant's background. A statement of value of, and justification for, proposed doctorate level training is contained in Attachment 1.

3. Preliminary to submission of this request, detailed discussions were held with officials of Ohio State University concerning the possibility of establishing the subject program. Attachment 2 identifies a tentative curriculum, which is subject to change, but reflects the need for a degree of flexibility. The approach used was to consider a program for an applicant well versed in the basic earth sciences and in optics, photographic physics and reconnaissance but needful of advanced work in the earth sciences, photogrammetry, geodesy and geophysics. In other words, to combine present knowledge with advanced work into the field of analysis of the space reconnaissance product.

T61-40086

This particular program is designed, therefore, to strengthen the academic background of an officer well disciplined in the foregoing academic and practical areas but needful of further advanced training to broaden his earth sciences and analysis capabilities. It should be noted that a thorough understanding of terrestrial forms and workings will be the key to analysis of extraterrestrial reconnaissance products; also, that a university has the prerogative of establishing their stringent requirements for doctoral studies and, therefore, though one or two courses may cause question, they are academically required to meet the overall objective. The degree or type of background of subsequent applicants may doubtless vary from that of the original applicant. Therefore, any proposed curriculum should be flexible to permit each applicant to attain an equivalent degree of knowledge in all of the required sciences. Attention should be paid to the large amount of time devoted to research; this, on a classified level if necessary, will be expended on specific problems of space age reconnaissance and photographic analysis.

4. To further clarify this request, the background of the considered applicant comprises a Bachelow of Science Degree in Engineering, Geology, graduate work in Geodesy, a Master of Arts Degree in Aerial Reconnaissance (Photographic Physics) and some ten years experience in R&D and operational reconnaissance including space systems.

5. Information required by paragraph 4, AFSCR 50-17; is appended as Attachment 3. It will be noted that the estimated annual student output is given as one for the first year and two each year thereafter. This level of training is considered necessary to assure to the AFSC and other users of this skill a continuing supply of talent. Anticipated users of this skill include the FTD and the SSD within AFSC, CAR, NASA and possibly ARPA.

6. In view of the FTD's requirement for personnel training at this level, it is requested that every effort be made to obtain approval for this doctorate level training in time for the first candidate to start training in Fiscal Year 1963 or earlier if possible.

7. This Headquarters will be pleased to provide any additional information or assistance necessary in preparation of the documentation.

NORMAN W. PERIBERG
Colonel, USAF
Chief of Staff

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1. Justification (T61-40086-A)
2. Tentative Curriculum (2 pgs)(U)
3. Education Requirements (U)

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VALUE OF AND JUSTIFICATION FOR

DOCTORATE LEVEL TRAINING

1. In problems dealing with high altitude reconnaissance of terrestrial activities, the scientific and technical skills necessary for instrumentation of the reconnaissance vehicles, processing and readout of subsequent photography, and use of the collected information have been exercised by separate employment of skilled people based upon knowledge of natural sciences, optics and photophysics, photogrammetry and geodesy/geology. The separate use of these skills in an effective manner is possible because each person had a common point of reference in his knowledge of terrestrial characteristics to which the skills were being applied. However, communications may suffer due to a lack of understanding of one another's problems.

2. In the case of scientific/intelligence information gathering and the use of the information resulting from terrestrial space reconnaissance vehicles and extraterrestrial probes and future reconnaissance vehicles, the same common point of reference is not available. For effective use, therefore, of the large amount of data which will be obtained, it is necessary to seek specially trained scientific skills which will embody a thorough working knowledge of all of the basic sciences involved in the gathering, processing and interpretation of optical information resulting from such reconnaissance. The qualified specialist should be knowledgeable of this material from the point of selection and development of optical equipment and vehicle environment to the actual taking of the photography through the processing, photogrammetry and photo interpretation stages and finally to the ultimate scientific evaluation of the results of the reconnaissance.

3. To obtain this degree of knowledgeability will require education of a small, carefully selected group in all of the basic sciences involved. These are as previously stated: natural sciences, photophysics and optics, photogrammetry and photointerpretation, geophysics, geodesy and geology. Air Force training programs at the present time are available to qualified people in one or more of the above specialties, but there are no courses aimed at the overall training to provide the ultimate desired capability.

T61-40086-A

Attachment 1

4. It is contemplated that with the development of this proposed capability, the AFSC and other users of the skill will then be able to realize the full value of the multi-billion dollar expenditure involved in the terrestrial and extraterrestrial reconnaissance. Since these will yield reconnaissance information on unknown regions in the universe, their full significance can hardly be realized unless there is available someone who combines a scientific appreciation of the probable subject matter of the photography, particularly of unfamiliar bodies, with a technical understanding of the characteristics, capabilities and limitations of the equipment by which the reconnaissance information was obtained.

5. The proposed skill is essential to the proper use of the reconnaissance information in intelligence estimates or evaluation of the reconnaissance targets. Within AFSC that user would be the FTD. It is also essential to persons planning, designing and developing new and improved interplanetary vehicles and determining what their performance capabilities and uses should be. Within the AFSC, that is the SSD. Additional bodies to whom the availability of such skill should be of great value are NASA which has the mission for planning and initiating peaceful interplanetary programs and OAR and ARPA which have the function for planning long range military research and development activities in this field.